SSI Improvement Matters

Newsletter from the national SSII Programme

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Welcome to our third Surgical Site Infection Improvement (SSII) Programme newsletter, a biannual update of the Programme's achievements.

The Programme was first rolled out to all DHBs in 2013, with a focus on orthopaedic surgery. Since then DHBs have made outstanding improvement in compliance rates with the Commission's quality and safety markers (QSMs). For instance, when the Programme began the national compliance rate for the recommended antibiotic prophylaxis was 51%. This has now risen to 95%, which is the national target.

Last year the Programme was extended to include cardiac surgery, and three of the five DHBs that perform cardiac surgery are now submitting data for the Programme: Auckland, Canterbury and Southern DHBs.

Surgical site infections (SSIs) following surgery can have disastrous consequences on patients and are a huge drain on the resources of our healthcare services. They occur as a result of a number of contributing factors, such as the health of the patient, as well as surgical and environmental factors. Therefore, reducing SSIs requires a multimodal approach.

The clinical interventions promoted by the SSII Programme have been shown internationally to be effective in reducing SSI rates. However, common sense approaches can only help. It's important to educate the patient about what they can do to minimise risk, such as not shaving in an area they're about to receive surgery.

It's also important that all members of the healthcare team are aware of their role in the prevention of SSIs. This year's World Hand Hygiene Day focused on improving hand hygiene practices in surgical services in the continuum of care. Clean hands save lives, including those of patients undergoing surgery.

When patients enter our hospitals they are putting their faith in us, rightly expecting they are in safe hands. By working together we can help ensure that they are.

Dr Arthur Morris
Clinical Leader, NZ SSII Programme

The national Surgical Site Infection Improvement Programme: at a glance

- In collaboration with district health boards (DHBs) throughout the country, the SSII Programme is promoting a series of interventions known to reduce SSIs.
- This is combined with a consistent, evidence-based approach for collecting and reporting high quality data about orthopaedic and cardiac SSIs in New Zealand.
- All 20 DHBs continue to submit high quality and timely data about orthopedic SSIs.
- Three DHBs are now submitting data in the first stage of the rollout of the SSII Programme into cardiac surgery.
- Eleven national orthopaedic reports have been published since the Programme began, detailing SSI rates, QSM (quality and safety marker) compliance by DHBs and more. Quarterly national reports can be found on the Commission website.

Patients undergoing surgery in hospitals have twice the rate of healthcare associated infections (HAIs) compared to hospital patients who haven't undergone surgery.

Orthopaedic: how are DHBs performing?

The results of the October to December 2015 national report for orthopaedic shows sustained improvements continue to be made by DHBs with the SSII Progamme's recommended clinical interventions.

Antibiotic dose: The correct antibiotic prophylaxis dose (≥2g cefazolin or ≥1.5g cefuroxime) was given 96% of the time, the QSM target. This is the fourth period the national target has been met.

Antibiotic timing: Performance against the prophylaxis timing QSM (0 - 60 minutes before knife to skin) was 97%. The QSM target is 100% 'on time' for primary procedures, which was achieved by five DHBs.

Alcohol based skin preparation: There has been significant improvement in skin preparation performance since the Programme began, when compliance was around 90%. This quarter, performance was 99%. This is very close to the 100% QSM target, which was achieved by 15 DHBs. All 20 DHBs achieved 98% or more.

Good news!

Particular congratulations to the four DHBs which met all QSMs this quarter: Capital & Coast, Lakes, West Coast and Whanganui DHBs.

This year's World Hand Hygiene Day focused on improving hand hygiene in surgical services. A number of excellent resources promoting hand hygiene in the surgical environment are still available on the WHO website, on the May 5 2016 webpage page at www.who.int/gpsc/5may/EN_PSP_GPSC1_5May_2016/en/

ACC support for the SSII Programme

In February 2016, the Accident Compensation Corporation (ACC) agreed to invest $1.1m over 2.5 years to build on and improve the existing national SSII Programme. The additional funding will be used to improve the Programme in public hospitals for orthopaedic surgery (hip and knee) and cardiac surgeries, with a particular focus on building quality improvement capability, consumer participation in the Programme and the national surveillance data collection.

Through the funding from ACC the Health Quality & Safety Commission is offering scholarships for a Quality Improvement Programme for IPC practitioners involved in implementing the national SSII Programme. This is an exciting opportunity and the first time the Commission has offered a quality improvement course targeted at a specific group. The programme begins in June and will run over 12 months. At the time of writing, 20 participants representing 19 DHBs had enrolled in the programme.

The Commission, in association with ACC, is also hosting a one-day workshop on 9 August in Wellington on reducing harm from healthcare associated infections. You can find full programme and registration details here. For more information contact jess.bilton@hqsc.govt.nz.

The cost of SSIs

According to a journal article published in the *New Zealand Medical Journal* co-authored by SSII Proramme team members, Drs Sally Roberts and Arthur Morris, patients who are re-admitted for a surgical site infection (SSI) following hip and knee arthroplasty will stay in hospital for a mean of 42 days, and the readmission cost for the DHB is around $40,000.

The paper was a retrospective case-control analysis that looked at eleven patients who developed an SSI in 2013, following primary hip and knee arthroplasty within 90 days of the operation. These were compared to a control group who had undergone the same operations, which had not been complicated by infection.

There were approximately 16,000 primary and revision hip and knee arthroplasties performed in DHBs and private surgical hospitals in New Zealand in 2013. The SSII Programme has estimated that the overall infection rate for hip and knee arthroplasty procedures performed in DHB hospitals is 1.3%, which indicates that just over 200 patients each year in New Zealand have an SSI requiring inpatient care. At an estimated cost of $40,000 per patient, the cost of SSIs for hip and knee surgery to DHBs nationally is therefore $8 million per year.

As the authors note: "This is probably a gross underestimate of the true cost of SSI for a number of reasons. Firstly, this cost does not include the personal costs to the patient, or their family and whānau, or the costs covered by the Accident Compensation Corporation (ACC)."

Nor does it cover the costs associated with managing infections in the community; a significant proportion of SSIs will be managed by primary care providers.

"And nor does that cost take into account the long-term economic consequences for these patients that can come with the physical and psychological impact of the SSI, patients who have put their trust in us," says Dr Morris. "Or the fact that some of these patients will die."

The paper, "Excess cost associated with primary hip and knee joint arthroplasty surgical site infections" can be found on the *New Zealand Medical Journal* website. (https://www.nzma.org.nz/journal)

Reducing SSIs in cardiac surgery

The SSII Programme interventions have been extended to cardiac procedures, with three of the five DHBs that perform cardiac surgery now submitting data; Auckland, Canterbury and Southern DHBs.

The first analysis of data was prepared in May 2016, covering the 1 October 2014 to 30 September 2015 period and a draft report for the October to December 2015 period has been sent to the DHBs that perform cardiac surgery.

We talk to Sean Galvin, cardiothoracic surgeon, Wellington Hospital, and member of the expert faculty group established to support the Programme's extension into cardiac surgery.

Why is the Programme important? Cardiac surgery is one of the most well studied specialties in surgery, in terms of databases and outcomes analysis. As a result, the rates of wound infection in cardiac are very low. Although infection rates are low, when they occur they create a lot of problems for patients, and have a considerable impact on their quality of life. When you look at the cohort of patients that we're operating on - people who are generally older, sicker, there's a high incidence of diabetes, a lot of smokers, a high proportion of patients requiring acute and urgent surgery - we're doing very well. But there's always potential to improve; anything we can do to reduce infections and improve patient recovery has to be good.

How common are SSIs in cardiac surgery? It depends on the operation, the patient cohort and the type of wound infection. In isolated coronary artery bypass grafting (CABG), deep sternal wound infection rates are generally less than one percent. For high-risk patients, patients receiving complicated operations such as multi-valve or combined operations, or patients who have had endocarditis, the rates of deep sternal wound infection might be one to two percent. For superficial wound infections, it depends on the harvest site. Radial artery harvest sites have a very low incidence of wound infection. However, leg harvest site infection rates could be five to six percent; many of these patients are elderly, have peripheral vascular disease, heart failure and the skin on the leg can be fragile, so the rate of leg wound infections and wound complications is higher.

How will the SSII Programme help? It will help us understand and get an overview of practices in New Zealand and the national rate of infection, to compare how we're doing with the rest of the world and see where there is room for improvement ... provisional Programme data [from the DHBs collecting data on quality and safety marker performance] is showing a high level of compliance with the Programme's recommendations, such as the antibiotic dose and the alcohol based skin preparation. However, this data will let us confirm that we are doing what we should be doing. Once we know that, the Programme will be able to be mature and evolve, and allow us look at any other interventions that will benefit us as a surgical community, and our patients.

The SSII Programme is one component of the Health Quality & Safety Commission's Infection Prevention and Control (IPC) Programme. The IPC Programme aims to reduce the harm and cost of healthcare associated infections, including SSIs. Auckland and Canterbury DHBs are the lead agency for the SSII Programme, which was rolled out nationally in 2013.

The data collected on the SSII Programme shows that almost half of SSIs in New Zealand are caused by *Staphylococcus aureus* and other staphylococcal species. The SSII Programme is planning to commission a meta-analysis of evidence for the efficacy of a bundle of interventions that could reduce staphylococcal colonisation prior to surgery. We will keep you updated.